

U.S. PUBLIC HEALTH PREPAREDNESS FOR SEASONAL INFLUENZA: HAS THE RESPONSE IMPROVED?

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QUESTIONS FOR THE RECORD**HOUSE ENERGY AND COMMERCE SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS***U.S. Public Health Preparedness for Seasonal Influenza: Has the Response Improved?*
THURSDAY, NOVEMBER 19, 2015**ROBIN ROBINSON, PHD**
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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS)**Rep. Blackburn**

1. In light of the ongoing public health challenges associated with pandemic influenza, do you expect this PREP Act declaration to be extended, and if so, when will it be extended?

The Secretary of Health and Human Services signed the Public Readiness and Emergency Preparedness (PREP) Act declaration on Dec. 1, 2015 to provide liability protection for the distribution of certain countermeasures that address pandemic influenza and other biothreats. The declaration was published in the Federal Register on Dec. 9, 2015, became effective on Jan. 1, 2016, and is scheduled to expire on Dec. 31, 2022. Any consideration of an extension beyond this point would be evaluated at a later point in time.

Rep. Tonko

1. How is BARDA assessing its current investments to ensure that you are fully leveraging the capacity that we have here in the United States for delivering these cutting edge technologies as quickly and effective as possible? And, what can we do in Congress to enhance your ability to meet these goals?

A member of the Public Health Emergency Medical Countermeasure Enterprise (PHEMCE), ASPR/BARDA uses a number of different methods to evaluate current and future investments for the development, procurement, production, and delivery of medical countermeasures. PHEMCE subject matter experts and industry partners help us conduct In-Process Reviews (IPR) for medical countermeasure (MCM) development projects concerning pandemic influenza. IPRs are conducted at key milestones to inform investments and evaluate performance. Internally, we manage annual program and portfolio reviews with our Scientific Board of Advisors to ensure that we are meeting our strategic goals and advancing national pandemic goals. With our PHEMCE colleagues, especially the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the National Vaccine Program Office (NVPO), and the National Institutes of Health (NIH), we participate in periodic meetings, workshops, and exercises on seasonal and pandemic influenza to address MCM planning and other issues. MCM planning and budgets for pandemic influenza are incorporated into the overall PHEMCE governance process.

The PHEMCE, conducts quarterly reviews to determine progress and identify challenges relative to the PHEMCE Strategic and Implementation Plan. The PHEMCE-wide pandemic influenza MCM portfolio reviews MCMs for other biothreats on an 18-month cycle.

The FY 2017 President's Budget request for pandemic influenza is \$125 million. Providing support at that level will help ensure the development of more effective seasonal and pandemic influenza vaccines, including potential universal vaccines that can provide protection against all influenza strains. In addition, supporting the program at the requested level will allow HHS to continue improving the influenza vaccine manufacturing process so more vaccines are available sooner. It will also allow the development of novel immunotherapeutics and next-generation antiviral drugs to treat critically-ill persons with influenza; allow the development and implementation of new rapid nucleotide sequencing technologies for virus surveillance and diagnostics, including the potential for self-administered diagnostics for home detection of influenza; and would sustain and expand national stockpiles of pre-pandemic influenza vaccines and antiviral drugs.

Rep. Green

1. With the understanding that it takes a realistic amount of lead time to produce the products necessary to administer vaccines and address an outbreak on a large scale, do you believe that we are in a position to respond today to the needs of 300 million Americans in the event of a pandemic?

Yes. The United States is more capable of developing, manufacturing, testing, and delivering needed vaccines, antiviral drugs, and diagnostics to meet the demands of an influenza pandemic than ever before. Investments in modern influenza vaccine technologies have led to the licensure of new cell and recombinant-based influenza vaccines by the Food and Drug Administration (FDA). Through this advancement we can expedite manufacturing, including influenza vaccines with adjuvants that can provide more vaccine with less vaccine antigen (antigen-sparing) and greater cross-protection against antigenically-different virus strains. Using new vaccine technologies, combined with our Centers for Innovation in Advanced Development and Manufacturing Fill Finish Manufacturing Network, domestic pandemic influenza vaccine manufacturing capacity has grown from 50 million doses in 2005 to more than 500 million doses in 2015. New technologies like reverse genetics, synthetic biology, and digital sterility assays has shortened the time frame for available pandemic influenza vaccines by 15 to 20 percent. Through multiple exercises and workshops, federal, state, and local partners have honed national response plans for manufacturing, distributing, and administering pandemic influenza vaccines.

Antiviral drug stockpiles for influenza are maintained at levels to treat at least 20 percent of the United States population. Since 2009, one new influenza antiviral drug has been approved by the FDA and may be administered as a single treatment. In addition, new immunotherapeutic therapeutic candidates are under development, which did not exist in 2009.

In terms of scientific advancement, more than 10 point-of-care and high-throughput polymerase chain reaction (PCR)-based and lateral flow antibody-based rapid diagnostic assays have been developed, approved by the FDA, and marketed in the U.S. to detect influenza in clinical samples. Many of the high-throughput assays are implemented in the U.S. Laboratory Response Network. In addition, many of these diagnostics are multiplex assays that can detect not only human and animal influenza viruses but also other respiratory pathogens that may present as influenza-like illnesses.

HHS is reviewing the HHS Pandemic Influenza Plan (2005) and preparing a revised plan that acknowledges our progress in MCM development and will incorporate lessons learned from the 2009 H1N1 pandemic and other influenza outbreaks. The revised plan will incorporate new advancements in influenza vaccines, antivirals, diagnostics, and other surveillance and control measures. It will also introduce new technologies to help treat, prevent, and minimize the impact of an emerging pandemic. Together, new goals will be enumerated for U.S. pandemic influenza preparedness and response in alignment with global goals and plans. The new HHS Pandemic Influenza Plan is slated for release in late 2016.

2. **What has BARDA learned from the H1N1 outbreak of 2009? Specifically, what steps have been taken as a result of lessons learned to ensure that we now have the appropriate number of drug delivery devices either to vaccinate or administer therapies in response to a large scale outbreak of influenza?**

In 2010, HHS and the President's Council of Advisors on Science and Technology (PCAST) made recommendations based on the 2009 H1N1 pandemic to improve pandemic influenza preparedness and response planning with regards to medical countermeasures. Subsequent exercises were conducted by HHS and others resulting in the HHS H1N1 lessons learned report (2013). In terms of medical countermeasures, important lessons learned included the need to expand access to more nimble and flexible domestic vaccine manufacturing capabilities utilizing new technologies such as cell- and recombinant-based vaccine manufacturing platforms, reverse genetics and synthetic biology, new methods for candidate vaccine strain generation, potency assays, and sterility assays. Key to these developments was public-private partnerships with industry, academics, and non-government organizations including the World Health Organization. Cost-sharing between HHS and industry partners was integral for this expansion, which included building new and retrofitting existing U.S.-based vaccine manufacturing facilities. Another key lesson concerned the need for constant, accurate, and seamless communication among HHS vaccine partners (ASPR, the Centers for Disease Control and Prevention (CDC), and FDA), vaccine manufacturers and distributors, and state and local health care providers.

ASPR/BARDA and CDC maintain stockpiles of ancillary supplies (i.e., needles, syringes, etc.) to administer vaccines and other products for pandemic influenza and other public health emergencies. Further, ASPR/BARDA has maintained contracts with major syringe and needle manufacturers since 2009 to supply these products. These contracts may be utilized at any time to expand the manufacture and delivery of these ancillary supply stockpiles. The 2009 contracts ensured that every H1N1 vaccine dose distributed in the U.S. was accompanied by the appropriate ancillary supply kit.

3. **After such a poor vaccine in the 2014-2015 season, what are each of your agencies doing in terms of outreach to combat the perception that the flu vaccine doesn't work? What efforts are being made to inform people on the importance of vaccination and the utility of the vaccine itself?**

ASPR/BARDA has led PHEMCE efforts to review, coordinate, and prepare action plans with FDA, CDC, the National Institutes of Health (NIH), and the National Vaccine Program Office (NVPO), as well as industry, academia, and other international influenza and vaccine experts, to minimize and address the effects of future late-season influenza virus antigenic drifts and seasonal influenza

vaccine mismatches. Last summer, members of the national and international scientific and public health community were convened by HHS and provided a number of specific recommendations to address near- and long-term influenza vaccine mismatch issues. Many of the recommendations called on HHS to focus on five areas: Timeliness of surveillance, candidate vaccine virus development and characterization, reagent preparation, vaccine production, and tracking vaccine distribution. We have discussed this plan with public health, scientific and industry stakeholders and have reviewed these seasonal influenza vaccine issues and risk mitigation plans at international scientific and professional medical organization meetings. These recommendations reinforce our long-term goals to develop more effective seasonal and pandemic influenza vaccines with universal potential. These plans were presented at BARDA Industry Day (October 2015) and at the PHEMCE Stakeholders Workshop (January 2016).